

SEQUENCE LISTING JC10 Recd PCT/EP 2.0 MAR 2002

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Gasch, Alexander
Berghof, Kornelia

<120> Method and nucleic acids for the detection of microorganisms
relevant to brewing

<130> 216087

<140>

<141> 2002-03-20

<150> PCT/EP00/08808

<151> 2000-09-08

<150> DE 199 45 964.9

<151> 1999-09-24

<160> 107

<170> PatentIn Ver. 2.1

<210> 1

<211> 267

<212> DNA

<213> Lactobacillus brevis

<400> 1

tatatggaag	taagaccct	gagagatgat	caggtagata	ggctggaagt	agcagcgccg	60
tgaggcgtgg	agcggaccag	tactaatcgg	tcgaggactt	aaccaagtca	acaacgtagt	120
tgtttcgaga	ataattgaat	aatatctagt	tttgagggaa	gaagttctct	tatagtgtgg	180
tggcgaatagc	ctgaaggata	cacctgttcc	catgccgaac	acagaagtta	agcttcagca	240
cgccgatagt	agttggggga	tcgcccc				267

<210> 2

<211> 326

<212> DNA

<213> Lactobacillus lindneri

<400> 2

ccattcctat	atggaagtaa	gactcctgaa	agatgatcag	gtcgataggt	tagaagtgga	60
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acagggttaa	atcaaagtgt	aacagagaag	atattatcta	gttttgagag	aacgaagtgc	180
gctcaggctt	atgaaaaata	agcatagtgt	ggtggcgata	gcctgaagga	tacacctgtt	240
cccatgccga	acacagaagt	taagcttcag	cacgcaaaaa	gtagttgggg	gatcgcccc	300
tgcgaggata	ggacgatggt	catagc				326

<210> 3

<211> 351

<212> DNA

<213> Lactobacillus casei

<400> 3

ccattcctat	atggaagtaa	gacccctgag	agatgatcag	gtagataggc	tggaagtgga	60
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gtgagcagga	gcgcttagaa	accggagcat	aagcgggcct	gagttcggtg	gccgggtttt	180
ggccaatgga	ttcagggttc	ttatgtggag	gtttctgcga	ctgcgaacgc	gtttcgatga	240

aatacactgg ttcccgacaa cacaaaaaca acaatgatag ccagttttga gagcgcaaag 300
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<210> 4

<211> 414

<212> DNA

<213> *Lactobacillus paracasei*

<400> 4

ccattcctat atggaagtaa gacccttgag agatgatcag gtagataggc tggaagtggg 60
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 tgtgagcagg agcgggttaga aaccggagca taagcgggcc tgagcgtgat ggccgggctt 180
 tggccattgc ggtcaggggtc cttatgtgca ggtttctgcg actgcgaaca cgtttcgatg 240
 acaagtacgt taagttcaag gcagcaatta aacaatgata gctagttttg agagcgcaaa 300
 gttctcataa gtgtgggtggc gatagcaaga aggatacacc tgttcccatg ccgaacacag 360
 aagttaagct tcttcacgcc gagagtagtt ggtgggaaac tgctgcgag gata 414

<210> 5

<211> 338

<212> DNA

<213> *Lactobacillus paracasei*

<400> 5

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 tgcaagcagg agcaggtttc tgcgactgcg aacacatttc gatgacaagt acgttaagtt 180
 caaggcagca attaaacgat gatagccagt tttgagagcg caaagttctc ataagtgtgg 240
 tggcgatagc aagaaggata cacctgttcc catgccgaac acagaagtta agcttcttca 300
 cgccgagagt agttgggtggg aaactgcctg cgaggata 338

<210> 6

<211> 317

<212> DNA

<213> *Lactobacillus coryniformis* ssp. *coryniformis*

<400> 6

ctcgagttaga gatttcccat tcctttatgg aagtaagacc cctgagagat gatcaggtag 60
 ataggttgga agtggacgtg ccgtgaggca tggagcggac caataactaat cggtcgagga 120
 cttaaccaag tagcatgtac gtagtgtagg ttttaaggga aagaaatgaa tatccagttt 180
 tgagagcgca acgttctcag aaagtgggtg ggtggcgata gcaagaagga tacacctgtt 240
 cccatgtcga acacagaagt taagcttctt agcgccgaga gtagttgggg gagcaccctt 300
 tgcgaggata ggacgat 317

<210> 7

<211> 317

<212> DNA

<213> *Lactobacillus coryniformis* ssp. *torquens*

<400> 7

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 cttaaccaag tagcatgtac gtggtgtagg ttttaaggga aagaaatgaa tatccagttt 180
 tgagagcgca acgttctcag aaagtgggtg ggtggcgata gcaagaagga tacacctgtt 240
 cccatgtcga acacagaagt taagcttctt agcgccgaga gtagttgggg gagcaccctt 300
 tgcgaggata ggacgat 317

<210> 8
 <211> 336
 <212> DNA
 <213> *Lactobacillus curvatus*

<400> 8
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 aggacttaac caaagggtgca atgttaggct tttgaaatga aatattactt attatgcagt 180
 tttgagagaa cgaagttctt ctcagtgcgc aagcacaaaa tagtgtggtg gcgatagcaa 240
 gaaggataca cctgttccca tgtcgaacac agaagttaag cttcttagcg ccgatagtag 300
 ttggtgggaa actacctgcg aggataggac gatggg 336

<210> 9
 <211> 335
 <212> DNA
 <213> *Pediococcus damnosus*

<400> 9
 gatgagattt cccattccat ttatggaagt aagaccctg agagatgatc aggtagatag 60
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 accacaaagt ggtgttctca agagaaggat tcgatattat ttagttttga gagaataaat 180
 ttctttcaca cgagccgcgt aagtggatcg gagaagtgtg gtgacgatag tgagaaggat 240
 acacctgttc ccatgtcgaa cacagaagtt aagcttctta acgccgagag tagttggggg 300
 atcgctccct gcgaggatag gacgatgggc aatag 335

<210> 10
 <211> 326
 <212> DNA
 <213> *Pediococcus inopinatus*

<400> 10
 agatgagatt tcccattcca tttatggaag taagaccctt gagagatgat caggtagata 60
 ggttgggagt ggaagtgtag tgatacatgg agcggaccaa tactaatcgg tcgaggactt 120
 aaccacaaag tgggtgttctc aaagagaaga tttcgatatt atttagtttt gagagaataa 180
 atttctttca cagagccgcg ggaagtggat cggagaagtg tggtgacgat agtgagaagg 240
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 ggatcgctcc ctgagaggat aggacg 326

<210> 11
 <211> 403
 <212> DNA
 <213> *Pectinatus cerevisiiphilus*

<400> 11
 aagtgcctgaa agcatctaag cgtgaaacct gccttaagat gaggtttccc agagccgtaa 60
 ggcttggaag gcaccttgaa taagacgagg tagataggcc gggagttagaa gtacagtaat 120
 gtacgaagcg gactggtact aataagccga gagcttaact taaaatcatc gaaaaaatg 180
 tttggtctga gatttcttct gtgaagtttt gagtgtgcaa gacactctgg ttgaagggca 240
 gggaacgtga gagcgtaaaa ctgcggactt tggctcaaag agttaagca tctggtgacg 300
 atacctggat ggatccacct gttcccattc cgaacacagt agttaagcat ccacaggctg 360
 aaggtacttg gggggcgacc ccctgggaaa ataggacact gcc 403

<210> 12
 <211> 434
 <212> DNA
 <213> *Pectinatus frisingensis*

<400> 12

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aagtgctgaa agcatcctaag cgtgaaacca gctttaagat gaggtttccc agaacgcaag 60
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atgaagcgga ctggtactaa taagccgaga gcttaacttg atttcatcaa aaaagagaaa 180
tgtttgggtca gagattttct tctgtgaagt tttgagtgtg caagaacact cgagagtata 240
taggtaaagg aaaagcagca gataagtttc ctggttactg tatataccgg ctgaggtgct 300
gaggcactga aggccagaac atctggtggc gatacctgga tggatccacc tgttcccatt 360
ccgaacacag tagttaagca tccacaggcc gaaggtactt ggggggcagc cccctgcgaa 420
aataggacac cgcc 434

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<210> 13

<211> 641

<212> DNA

<213> *Pectinatus spec.* DSM20764

<400> 13

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atacgaagcg gactggtact aataagccga gagcttaact taatttcac tataaatggt 180
tggtcctgat ttcttctgtg aagttttgag tgtgcaagat cactcatgaa agtatatagg 240
taaaggggaaa gcagcagatt agttcctggg ttactttata tatgagcact aaggtgcaga 300
aaagaacggt tgaggaaacg cggcggttct aaactcactt tgcgtgctga ttatctcaat 360
gctaaagcat taagataatt ttagaggaaa cgcgcgttca ctacggttca ctctgcgtac 420
tttatttcta agtgctgaag cactaagaag ggcaaggaaa cgcgtcgttc gcgatgctca 480
ctttgcgtac ttcatctcta gactgctaaa gcagtaagat ctgaagcatc tgggtggcgat 540
acctggatgg atccacctgt tcccattccg aacacagtag ttaagcatcc acaggccgaa 600
ggtacttggg gggcagcccc ctgcgagagt aggacatcgc c 641

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<210> 14

<211> 495

<212> DNA

<213> *Pectinatus spec.* DSM20764

<400> 14

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ggcttggaag gcaccttgaa gatgacgagg tagataggcc gggagtagaa gtatgggtgac 120
atacgaagcg gactggtact aataagccga gagcttaact taatttcac tataaatggt 180
tggtcctgat ttcttctgtg aagttttgag tgtgcaagat cactcatgaa agtatatagg 240
taaaggggaaa gcagattagt tcctggttta ctttatatat gagcactaag gtgcagaaaa 300
gaacgtctaa ggaaacgcgg cgttcgtagg ctactctgc gtacttcac tctagactgc 360
taaagcagta agatctgaag catctggtgg cgatacctgg atggatccac ctgttcccat 420
tccgaacaca gtagttaagc atccacaggc cgaaggtact tggggggcag cccctgcgaa 480
aagtaggaca ccgcc 495

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<210> 15

<211> 546

<212> DNA

<213> *Megasphaera cerevisiae*

<400> 15

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ccatgaagac gacatggtag ataggccggg agtggacgta cagtaatgta tggagcggac 120
cggactaat agaccgagga cttgacttaa gcagggaacc cattttaaag aagcgaagcg 180
acgcataaaa tggagtgaat cgcttatacc gaatcgaga ttcggtaaa cagcggagaa 240
taccaatgca gcggcaacac cagttagcat aaactaagcg gattcggagt ggggtgaggga 300
gtttcgtagc agcgtaggct aacccaacca ccgctttcga agaaggcgaa tggtttgaaa 360
aagagtacat gcgaagaaac gacgaaagac tcacaaccaa aacatacaaa ctaagtagat 420

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gacattagag tcacaccgat tgttaagatc cgaaatactt ttcgatgtag ttgtcaggat 480
 acgaatcctg aaacgaattc agtgggtgatg gctgcaggga tccacctgtt cccataccga 540
 acacag 546

<210> 16
 <211> 306
 <212> DNA
 <213> *Megasphaera cerevisiae*

<400> 16
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 ccatgaagac gacatggtag ataggccggg agtggacgta cagtaatgta tggagcggac 120
 cggtagctaat agaccgagga cttgacttaa gcaaagaagc aatagaaaga accatgtaga 180
 tgggtgtaaga gttagacggg tagttaaggc ccgaaatact tttcgatgta gttgtcagga 240
 tacgaatcct gaaacgaatt cagtgggtgat ggctgcaggg accacctgtt cccataccga 300
 acacag 306

<210> 17
 <211> 449
 <212> DNA
 <213> *Selenomonas lacticifex*

<400> 17
 aagtgtctgaa agcatctagg cgtgaagcct gtcccgagat gaagtatctc atggagtaat 60
 ccagtaagat tccttgaaga agacaaggta gatagggttg gagtgtaagc atcgtaaggc 120
 gttcagcggg ccaataactaa taaatcgagg gcttaacttt acagacctgt ccaagaagcg 180
 aagcggattg ggtaacaggc cgtatgcgaa aacatcccaa gaatcgagtc cgaagggcga 240
 agatgattgg cagatgttga ccgctaataa tctagaatgt ttcgatacaa tttttcttct 300
 gtatagtttt gagtggacat cgttcattca ataatatcca gtgacgatag ctgagtggta 360
 ccacctgttc ccataccgaa cacagtagtt aagcactcat acgccgaaag tacttgtctg 420
 gaaacgggct gcgagaatag gacgtcgcc 449

<210> 18
 <211> 343
 <212> DNA
 <213> *Selenomonas lacticifex*

<400> 18
 aagtgtctgaa agcatctaa cgtgaagcct gtcccgagat gaagtatctc atggagtaat 60
 ccagtaagat tccttgaaga agacaaggta gatagggttg gagtgtaagc atcgtaaggc 120
 gttcagcggg ccaataactaa taaatcgagg gcttatctta ataacttaga atgtttcgat 180
 acaatttttc ttctgtatag ttttgagtgg acatgggttca ttcaataata tccagtgcag 240
 atagctgagt ggtaccacct gttcccatac cgaacacagt agttaagcac tcatacgccg 300
 aaagtacttg tctggaaacg ggctgcgaaa ataggacgcc gcc 343

<210> 19
 <211> 395
 <212> DNA
 <213> *Zymophilus raffinivorans*

<400> 19
 aagtgtctgaa agcatctaa cgtgaaacca gccttaagat gaggtttctc acagagcaat 60
 ctggtaagac cccttgaaga agacaaggta gatagggtcg gagtggaagc gcagtaatgt 120
 gtgcagcggg ccgatactaa taggtcgagg gcttgactta aagccagaac gaaaactaaa 180
 atgcgaacat ttctttcttc tgtatagttt tgagagaaca aactcttaag atggagtagt 240
 ctgaggcgaa agcgggaaggc agcgatatct aaaaaaagaa tatctggtag tgatagccaa 300
 gtggaccac ctgttcccat accgaacaca gtagttaagc acttgaacgt cgaaagtact 360

tggggtggaaa cgccctgcga aaataggaca ccgcc

395

<210> 20
 <211> 395
 <212> DNA
 <213> Zymophilus paucivorans

<400> 20
 aagtgtctgaa agcatctaa cgtgaaacca gccttaagat gaggtttctc acagagcaat 60
 ctggtgaagac cccttgaaga agacaaggta gataggtcgg gagggaagc gcagtaatgt 120
 gtgtagcga cgcatactaa taggtcgagg gcttgactta aagccagaac gaattctaaa 180
 atgcgaacat ttctttcttc tgtatagttt tgagagaaca gactcttaag atgagcagtc 240
 tgaggcgaaa gctaaaggca gcgatatcta aaaaaaagaa tatctggtag tgatagccaa 300
 gtggaccac ctgttcccat accgaacaca gtagttaagc acttgaacgt cgaaagtact 360
 tgggtggaaa cgccctggga aaataggaca ccgcc 395

<210> 21
 <211> 21
 <212> DNA
 <213> Artificial sequence

<220>
 <223> Description of the artificial sequence: specific
 sequence for Lactobacillus brevis

<400> 21
 ccaagtcaac aacgtagttg t 21

<210> 22
 <211> 23
 <212> DNA
 <213> Artificial sequence

<220>
 <223> Description of the artificial sequence: specific
 sequence for Lactobacillus lindneri

<400> 22
 gacacagggt taaatcaaag ttg 23

<210> 23
 <211> 20
 <212> DNA
 <213> Artificial sequence

<220>
 <223> Description of the artificial sequence: specific
 sequence for Lactobacillus casei and Lactobacillus
 paracasei

<400> 23
 aggtttctgc gactgcgaac 20

<210> 24
 <211> 25
 <212> DNA

<213> Artificial sequence

<220>

<223> Description of the artifical sequence: specific
sequence for *Lactobacillus coryniformis*

<400> 24

atgtacgtag tgtagttta agggc

25

<210> 25

<211> 20

<212> DNA

<213> Artificial sequence

<220>

<223> Description of the artifical sequence: specific
sequence for *Lactobacillus curvatus*

<400> 25

cttctcagtg cgcaagcaca

20

<210> 26

<211> 22

<212> DNA

<213> Artificial sequence

<220>

<223> Description of the artifical sequence: specific
sequence for *Pediococcus damnosus*

<400> 26

gtgttctcaa gagaaggatt cg

22

<210> 27

<211> 27

<212> DNA

<213> Artificial sequence

<220>

<223> Description of the artifical sequence: specific
sequence for *Pediococcus inopinatus*

<400> 27

gttctcaaag agaagatttc gatatta

27

<210> 28

<211> 23

<212> DNA

<213> Artificial sequence

<220>

<223> Description of the artifical sequence: specific
sequence for *Pectinatus cerevisiophilus*

<400> 28

tgagagcgta aaactgcgga ctt

23

<210> 29
 <211> 22
 <212> DNA
 <213> Artifical sequence

<220>
 <223> Description of the artifical sequence: specific
 sequence for *Pectinatus frisingensis*

<400> 29
 cagataagtt tcctggttac tg 22

<210> 30
 <211> 23
 <212> DNA
 <213> Artifical sequence

<220>
 <223> Description of the artifical sequence: specific
 sequence for *Pectinatus spec.* DSM 20764

<400> 30
 cactaaggtg cagaaaagaa cgt 23

<210> 31
 <211> 26
 <212> DNA
 <213> Artifical sequence

<220>
 <223> Description of the artifical sequence: specific
 sequence for *Megasphaera cerevisiae*

<400> 31
 cttttcgatg tagttgtcag gatacg 26

<210> 32
 <211> 25
 <212> DNA
 <213> Artifical sequence

<220>
 <223> Description of the artifical sequence: specific
 sequence for *Selenomonas lacticifex*

<400> 32
 gttcattcaa taatatccag tgacg 25

<210> 33
 <211> 23
 <212> DNA
 <213> Artifical sequence

<220>
 <223> Description of the artifical sequence: specific
 sequence for *Zymophilus raffinovorans*

<400> 33
aactcttaag atggagyagt ctg 23

<210> 34
<211> 22
<212> DNA
<213> Artifical sequence

<220>
<223> Description of the artifical sequence: specific
sequence for Zymophilus paucivorans

<400> 34
actcttaaga tgagcagtct ga 22

<210> 35
<211> 21
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<213> Artifical sequence

<220>
<223> Description of the artifical sequence: specific
sequence for the genus Pediococcus

<400> 35
agtstagtga tacatggagc g 21

<210> 36
<211> 22
<212> DNA
<213> Artifical sequence

<220>
<223> Description of the artifical sequence: specific
sequence for the genus Pectinatus

<400> 36
gtgaagtttt gagtgtgcaa ga 22

<210> 37
<211> 22
<212> DNA
<213> Artifical sequence

<220>
<223> Description of the artifical sequence: specific
sequence for the genus Megasphaera

<400> 37
gaccgaggac ttgacttaag ca 22

<210> 38
<211> 20
<212> DNA
<213> Artifical sequence

<220>		
<223>	Description of the artifical sequence: specific sequence for the genus Selenomonas	
<400>	38	
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<210>	39	
<211>	25	
<212>	DNA	
<213>	Artifical sequence	
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<223>	Description of the artifical sequence: specific sequence for the genus Zymophilus	
<400>	39	
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<210>	40	
<211>	19	
<212>	DNA	
<213>	Artifical sequence	
<220>		
<223>	Description of the artifical sequence: consensus sequence	
<400>	40	
	gtcgtgagac agttcggtc	19
<210>	41	
<211>	21	
<212>	DNA	
<213>	Artifical sequence	
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<223>	Description of the artifical sequence: consensus sequence	
<400>	41	
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<210>	42	
<211>	21	
<212>	DNA	
<213>	Artifical sequence	
<220>		
<223>	Description of the artifical sequence: consensus sequence	
<400>	42	
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<210>	43	
<211>	21	
<212>	DNA	

<213> Artifical sequence

<220>

<223> Description of the artifical sequence: consensus sequence

<400> 43

atcgacggggg aggtttssca c

21

<210> 44

<211> 20

<212> DNA

<213> Artifical sequence

<220>

<223> Description of the artifical sequence: consensus sequence

<400> 44

cacctcgatg tcggctcrtc

20

<210> 45

<211> 18

<212> DNA

<213> Artifical sequence

<220>

<223> Description of the artifical sequence: consensus sequence

<400> 45

ccaagggttg ggctgttc

18

<210> 46

<211> 19

<212> DNA

<213> Artifical sequence

<220>

<223> Description of the artifical sequence: consensus sequence

<400> 46

aagggccatc rctcaacgg

19

<210> 47

<211> 20

<212> DNA

<213> Artifical sequence

<220>

<223> Description of the artifical sequence: consensus sequence

<400> 47

aagtgctgaa agcatctaag

20

<210> 48

<211> 23

<212> DNA

<213> Artifical sequence

<220>

<223> Description of the artifical sequence: consensus sequence

<220>

<221> misc_feature

<222> (9)..(10)

<223> "n" is inosine

<400> 48

tgtgttcggn atgggaacag gtg

23

<210> 49

<211> 23

<212> DNA

<213> Artifical sequence

<220>

<223> Description of the artifical sequence: consensus sequence

<400> 49

tgtgttcgga atgggaacag gtg

23

<210> 50

<211> 23

<212> DNA

<213> Artifical sequence

<220>

<223> Description of the artifical sequence: consensus sequence

<400> 50

tgtgttcgaa atgggaacag gtg

23

<210> 51

<211> 23

<212> DNA

<213> Artifical sequence

<220>

<223> Description of the artifical sequence: consensus sequence

<400> 51

tgtgttcggt atgggaacag gtg

23

<210> 52

<211> 23

<212> DNA

<213> Artifical sequence

<220>

<223> Description of the artifical sequence: consensus sequence

<400> 52

tgtgttcgat atgggaacag gtg

23

<210> 53
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 <212> DNA
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<220>
 <223> Description of the artifical sequence: consensus sequence

<400> 53
 tgtgttcggc atgggaacag gtg 23

<210> 54
 <211> 23
 <212> DNA
 <213> Artifical sequence

<220>
 <223> Description of the artifical sequence: consensus sequence

<400> 54
 tgtgttcgac atgggaacag gtg 23

<210> 55
 <211> 19
 <212> DNA
 <213> Artifical sequence

<220>
 <223> Description of the artifical sequence: consensus sequence

<400> 55
 ggcrrygtcc taytytcsc 19

<210> 56
 <211> 19
 <212> DNA
 <213> Artifical sequence

<220>
 <223> Description of the artifical sequence: consensus sequence

<400> 56
 ggcagtgtcc tactttccc 19

<210> 57
 <211> 19
 <212> DNA
 <213> Artifical sequence

<220>
 <223> Description of the artifical sequence: consensus sequence

<400> 57
 ggcagcgtcc tactttcgc 19

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<210> 58
<211> 19
<212> DNA
<213> Artifical sequence
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<220>
<223> Description of the artifical sequence: consensus sequence
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<400> 58
ggcagtgtcc tacttttcgc
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<210> 59
<211> 19
<212> DNA
<213> Artificial sequence
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<220>
<223> Description of the artifical sequence: consensus sequence
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<400> 59
ggcagcgtcc tactttccc
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<210> 60
<211> 18
<212> DNA
<213> Artificial sequence
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<220>
<223> Description of the artifical sequence: consensus sequence
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<400> 60
gyttmrettc yrdgttcg 18

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<210> 61
<211> 18
<212> DNA
<213> Artifical sequence
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<220>
<223> Description of the artifical sequence: consensus sequence
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<400> 61
gcttaacttc cgtgttcg 18

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<210> 62
<211> 18
<212> DNA
<213> Artificial sequence
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<220>
<223> Description of the artificial sequence: consensus sequence

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<400> 62
qcttaacttc tatgttcg
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<210> 63

<211> 18
 <212> DNA
 <213> Artifical sequence

<220>
 <223> Description of the artifical sequence: consensus sequence

<400> 63
 gcttaacttc tgtgttcg 18

<210> 64
 <211> 18
 <212> DNA
 <213> Artifical sequence

<220>
 <223> Description of the artifical sequence: consensus sequence

<400> 64
 gcttaacttc catgttcg 18

<210> 65
 <211> 18
 <212> DNA
 <213> Artifical sequence

<220>
 <223> Description of the artifical sequence: consensus sequence

<400> 65
 gcttaacttc cgggttcg 18

<210> 66
 <211> 18
 <212> DNA
 <213> Artifical sequence

<220>
 <223> Description of the artifical sequence: consensus sequence

<400> 66
 gcttaacttc taggttcg 18

<210> 67
 <211> 18
 <212> DNA
 <213> Artifical sequence

<220>
 <223> Description of the artifical sequence: consensus sequence

<400> 67
 gcttaacttc tgggttcg 18

<210> 68
 <211> 18

<212> DNA
 <213> Artifical sequence

<220>

<223> Description of the artifical sequence: consensus sequence

<400> 68
 gcttaacttc caggttcg 18

<210> 69
 <211> 18
 <212> DNA
 <213> Artifical sequence

<220>

<223> Description of the artifical sequence: consensus sequence

<400> 69
 gcttaacttc cgagttcg 18

<210> 70
 <211> 18
 <212> DNA
 <213> Artifical sequence

<220>

<223> Description of the artifical sequence: consensus sequence

<400> 70
 gcttaacttc taagttcg 18

<210> 71
 <211> 18
 <212> DNA
 <213> Artifical sequence

<220>

<223> Description of the artifical sequence: consensus sequence

<400> 71
 gcttaacttc tgagttcg 18

<210> 72
 <211> 18
 <212> DNA
 <213> Artifical sequence

<220>

<223> Description of the artifical sequence: consensus sequence

<400> 72
 gcttaacttc caagttcg 18

<210> 73
 <211> 25

<212> DNA
 <213> Artifical sequence

 <220>
 <223> Description of the artifical sequence: specific
 sequence for Lactobacillus brevis

 <400> 73
 tcgagaataa ttgaataata tctag 25

 <210> 74
 <211> 20
 <212> DNA
 <213> Artifical sequence

 <220>
 <223> Description of the artifical sequence: specific
 sequence for Lactobacillus brevis

 <400> 74
 gaggaagaa gttctcttat 20

 <210> 75
 <211> 23
 <212> DNA
 <213> Artifical sequence

 <220>
 <223> Description of the artifical sequence: specific
 sequence for Lactobacillus lindneri

 <400> 75
 aacagagaag atattatcta gtt 23

 <210> 76
 <211> 42
 <212> DNA
 <213> Artifical sequence

 <220>
 <223> Description of the artifical sequence: specific
 sequence for Lactobacillus lindneri

 <400> 76
 ttgagagaac gaagttcgct caggcttatg aaaaataagc at 42

 <210> 77
 <211> 45
 <212> DNA
 <213> Artifical sequence

 <220>
 <223> Description of the artifical sequence: specific
 sequence for Lactobacillus casei

 <400> 77
 ttcgttggcc gggttttggc caatggattc agggttctta tgtgg 45

<210> 78
 <211> 58
 <212> DNA
 <213> Artificial sequence

<220>
 <223> Description of the artifical sequence: specific
 sequence for Lactobacillus casei

<400> 78
 gcgtttcgat gaaatacact gggtcccgac aacacaaaaa caacaatgat agccagtt 58

<210> 79
 <211> 29
 <212> DNA
 <213> Artificial sequence

<220>
 <223> Description of the artifical sequence: specific
 sequence for Lactobacillus casei and Lactobacillus
 paracasei

<400> 79
 ttagaaaccg gagcataagc gggcctgag 29

<210> 80
 <211> 46
 <212> DNA
 <213> Artificial sequence

<220>
 <223> Description of the artifical sequence: specific
 sequence for Lactobacillus paracasei

<400> 80
 gcgtgatggc cgggcttttg ccattgcggt cagggtcctt atgtgc 46

<210> 81
 <211> 46
 <212> DNA
 <213> Artificial sequence

<220>
 <223> Description of the artifical sequence: specific
 sequence for Lactobacillus paracasei

<400> 81
 caagtacggt aagttcaagg cagcaattaa acaatgatag ctagtt 46

<210> 82
 <211> 44
 <212> DNA
 <213> Artificial sequence

<220>

<223> Description of the artifical sequence: specific
sequence for *Lactobacillus coryniformis*

<400> 82
aaagaaatga atatccagtt ttgagagcgc aacgttctca gaaa 44

<210> 83
<211> 48
<212> DNA
<213> Artifical sequence

<220>
<223> Description of the artifical sequence: specific
sequence for *Lactobacillus curvatus*

<400> 83
aggtgcaatg ttaggctttt gaaatgaaat attacttatt atgcagtt 48

<210> 84
<211> 22
<212> DNA
<213> Artifical sequence

<220>
<223> Description of the artifical sequence: specific
sequence for *Pediococcus damnosus*

<400> 84
gccgcgtaag tggatcggag aa 22

<210> 85
<211> 22
<212> DNA
<213> Artifical sequence

<220>
<223> Description of the artifical sequence: specific
sequence for *Pediococcus inopinatus*

<400> 85
gccgcggaag tggatcggag aa 22

<210> 86
<211> 25
<212> DNA
<213> Artifical sequence

<220>
<223> Description of the artifical sequence: sequence for
the detection of *Pediococcus damnosus*, *Pediococcus*
inopinatus and *Pediococcus parvulus*

<400> 86
gagagaataa atttctttca cacga 25

<210> 87

<211> 39
 <212> DNA
 <213> Artifical sequence

<220>
 <223> Description of the artifical sequence: specific
 sequence for *Pectinatus cerevisiiphilus*

<400> 87
 aaaatcatcg aaaaaaatgt ttggtctgag attttcttct 39

<210> 88
 <211> 25
 <212> DNA
 <213> Artifical sequence

<220>
 <223> Description of the artifical sequence: specific
 sequence for *Pectinatus cerevisiiphilus*

<400> 88
 cactctgggtt gaagggcagg gaacg 25

<210> 89
 <211> 39
 <212> DNA
 <213> Artifical sequence

<220>
 <223> Description of the artifical sequence: specific
 sequence for *Pectinatus frisingensis*

<400> 89
 gatttcatca aaaaagagaa atgtttggtc agagatttt 39

<210> 90
 <211> 33
 <212> DNA
 <213> Artifical sequence

<220>
 <223> Description of the artifical sequence: specific
 sequence for *Pectinatus frisingensis*

<400> 90
 tatataccgg ctgaggtgct gaggcactga agg 33

<210> 91
 <211> 36
 <212> DNA
 <213> Artifical sequence

<220>
 <223> Description of the artifical sequence: specific
 sequence for *Pectinatus spec. DSM 20764*

<400> 91

aatttcacatct ataaatgttt ggtcctgatt tcttct

36

<210> 92
 <211> 54
 <212> DNA
 <213> Artifical sequence

<220>
 <223> Description of the artifical sequence: specific
 sequence for Pectinatus spec. DSM 20764

<400> 92
 agattagttc ctgggtttact ttatatatga gcactaaggt gcagaaaaga acgt

54

<210> 93
 <211> 20
 <212> DNA
 <213> Artifical sequence

<220>
 <223> Description of the artifical sequence: specific
 sequence for Pectinatus spec. DSM 20764

<400> 93
 aggaaacgcg gcgttcgtaa

20

<210> 94
 <211> 56
 <212> DNA
 <213> Artifical sequence

<220>
 <223> Description of the artifical sequence: specific
 sequence for Selenomonas lacticifex

<400> 94
 taataatcta gaatgtttcg atacaatttt tcttctgtat agttttgagt ggacat

56

<210> 95
 <211> 24
 <212> DNA
 <213> Artifical sequence

<220>
 <223> Description of the artifical sequence: specific
 sequence for Zymophilus raffinivorans

<400> 95
 gaggcgaaag cggaaggcag cgat

24

<210> 96
 <211> 24
 <212> DNA
 <213> Artifical sequence

<220>

<223> Description of the artifical sequence: specific
sequence for *Zymophilus paucivorans*

<400> 96
gaggcgaaag ctaaaggcag cgat

24

<210> 97
<211> 37
<212> DNA
<213> Artifical sequence

<220>
<223> Description of the artifical sequence: specific
sequence for *Megasphaera cerevisiae*

<400> 97
aatcctgaaa cgaattcagt ggtgatggct gcaggga

37

<210> 98
<211> 20
<212> DNA
<213> Artifical sequence

<220>
<223> Description of the artifical sequence: sequence for
detection of bacteria of the family Lactobacillaceae
that are relevant to brewing

<400> 98
tatggaagta agaccctga

20

<210> 99
<211> 21
<212> DNA
<213> Artifical sequence

<220>
<223> Description of the artifical sequence: sequence for
detection of bacteria of the family Lactobacillaceae
that are relevant to brewing

<400> 99
agatgatcag gtagataggc t

21

<210> 100
<211> 21
<212> DNA
<213> Artifical sequence

<220>
<223> Description of the artifical sequence: sequence for
detection of bacteria of the family Lactobacillaceae
that are relevant to brewing

<400> 100
agatgatcag gtcgataggt t

21

<210> 101
 <211> 21
 <212> DNA
 <213> Artifical sequence

<220>

<223> Description of the artifical sequence: sequence for
 detection of bacteria of the family Lactobacillaceae
 that are relevant to brewing

<400> 101
 agatgatcag gtagataggt t

21

<210> 102
 <211> 25
 <212> DNA
 <213> Artifical sequence

<220>

<223> Description of the artifical sequence: sequence for
 detection of bacteria of the family Lactobacillaceae
 that are relevant to brewing

<400> 102
 tactaatcgg tcgaggactt aacca

25

<210> 103
 <211> 26
 <212> DNA
 <213> Artifical sequence

<220>

<223> Description of the artifical sequence: sequence for
 detection of bacteria of the family Lactobacillaceae
 that are relevant to brewing

<400> 103
 atactaatca gtcgaggact taacca

26

<210> 104
 <211> 32
 <212> DNA
 <213> Artifical sequence

<220>

<223> Description of the artifical sequence: specific
 sequence for the genus Pectinatus

<400> 104
 gaagcggact ggtactaata agccgagagc tt

32

<210> 105
 <211> 32
 <212> DNA
 <213> Artifical sequence

<220>
<223> Description of the artifical sequence: specific
sequence for the genus Selenomonas

<400> 105
cagcggacca atactaataa atcgagggct ta 32

<210> 106
<211> 38
<212> DNA
<213> Artifical sequence

<220>
<223> Description of the artifical sequence: specific
sequence for the genus Zymophilus

<400> 106
agcggaccga tactaatagg tcgagggctt gacttaaa 38

<210> 107
<211> 32
<212> DNA
<213> Artifical sequence

<220>
<223> Description of the artifical sequence: specific
sequence for the genus Megasphaera

<400> 107
ggagcggacc ggtactaata gaccgaggac tt 32